William Chargin

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Please visit my website at git.io/wc for an interactive résumé, and more up-to-date and detailed project descriptions.

Education and selected skills

Carnegie Mellon University: B.S. Computer Science with honors; minor in Mathematics. GPA 4.00.
(All requirements fulfilled; degree to be conferred.)

Honors thesis in logical foundations of programming languages: *A general system of adjoint logic.* Related paper:
Adjoint logic and its concurrent operational interpretation, submitted to LICS 2018; www.cs.cmu.edu/~fp/papers/adjoint18.pdf

Proficient or better in: Python, Java, C, Haskell; JavaScript, React; Google App Engine; Git; LaTeX, TikZ, Blender 3D.

Experience

Google Brain   Mountain View, CA
Software Engineering Intern   *May–August 2017*
- Worked on the TensorFlow team developing TensorBoard, an open-source framework that helps developers and researchers to understand, debug, and improve their machine learning models.
- Designed and implemented a rich plugin system to enable all users to write data visualizations tailor-made for their purposes. This system is already used by external contributors. Work spans web frontend, Python backend, and core TensorFlow API design.

Addison–Wesley Publishers   Pittsburgh, PA
Technical editor for Effective Java, 3rd edition   *February–December 2017*
- Contributed novel technical content, in addition to suggesting improvements to prose, grammar, typography, etc.

Khan Academy   Mountain View, CA
Software Developer Intern (infrastructure)   *May–August 2016*
- Extended the site's core content system to enable creating and curating content separately for different languages and locales, as opposed to simply translating existing content.
- Conducted extensive testing of correctness, performance, memory, and cost to ensure a smooth transition upon launch.
- Improved tooling to help translators, content creators, and international teams work effectively with the new content system.

Khan Academy   Mountain View, CA
Software Developer Intern (frontend and backend)   *June–September 2015*
- Frontend, backend: added CMS support for thumbnail upload, compositing, storage, and usage; implemented streaks (à la Duolingo).
- Backend: implemented hot loading of JSX and CSS/Less for development; sped up internal content publish process by 57%.

Selected projects

Assorted interesting course projects   Java
- A data visualization framework supporting arbitrary data plugins (e.g., web scrapers) and visualization plugins (e.g., histograms).
- An expanded version of *Scrabble*, including well-tested core logic and a polished GUI.
- More details (technical descriptions, documentation, screenshots, videos) at wchargin.github.io/projects/cmu-15-214.

Microcomputer assembler and simulator   JavaScript
- Web-based interactive simulator for the LC-3, a teaching microcomputer, to supersede the standard Windows application.
- Simulator includes accurate instruction cycle, debugging tools, polling-based and interrupt-driven I/O, and file upload/download.
- Released as free software at wchargin.github.io/lc3web. Used by more than 2,000 students of Cal Poly's CPE 225 course to date.

Model United Nations debate moderation system   Java
- Created and deployed an application system that unifies the tools that chairs need to aptly moderate debates.
- Implemented networking across multiple computers to maximize efficiency; separate modes for head chair, director, and rapporteur.
- Deployed system at multiple conferences; system used by dozens of chairs and hundreds of delegates.
- Released as free software; available at wchargin.github.io/kiosk.

Automated grading system   Bash, Java
- Automatically tests and grades student work for style and correctness, according to customizable and extensible grading modules.
- Grades and archives all student work at assignment due dates, and immediately emails students with helpful feedback.
- Includes tool to efficiently manually investigate failing submissions, to ensure that all grades are accurate.